

We Claim :

1. An alternating current machine comprising a rotor
journalled for rotation within a stator comprising stator
5 windings which are gathered together into an annular
array at one end of the stator, the stator windings
having terminal leads which are guided around respective
circumferentially extending paths and coupled to terminal
means, there being a plurality of such circumferentially
10 extending paths, each at locations which are spaced
axially from other such paths with respect to the stator,
the improvement comprising a circumferential array of
supporting and guiding means at said one end of the
stator for guiding said terminal leads around said paths,
15 the supporting and guiding means being spaced from one
another circumferentially such that said terminal leads
supported and guided thereby extend between them in free
space and ventilation gaps are formed between adjacent
terminal leads and supporting and guiding means whereby
20 cooling of the terminal leads is enhanced by air flow
through those ventilation gaps.

2. An alternating current machine according to claim
1, wherein each stator winding lead is an integral
25 continuation of a conductor which forms a respective

stator winding.

3. An alternating current machine according to claim 1, wherein the stator winding terminal leads that
5 comprise the ends of a respective stator winding are led together for connection to respective terminals of a terminal block from a location which is in the same notional plane that is normal to the axis of rotation of the rotor within the stator.

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4. An alternating current machine, according to claims 1, wherein each of the supporting and guiding means of said array comprises an axially orientated member which is formed of electrically insulating plastics material
15 and which is operable to guide the discrete bundles side by side along the respective paths between the adjacent members of the array.

5. An alternating current machine according to claim 20 4, wherein each member comprises an elongate back portion with integral prongs which project laterally therefrom so that it has the form of a comb, the prongs projecting outwardly with respect to the axis of the stator and serving as spacers which space juxtaposed ones of the
25 terminal leads apart and react electromagnetic forces

which act to urge towards them either of the terminal leads they separate.

6. An alternating current machine according to claim 5, wherein the prongs are shaped so that the nearer sides of juxtaposed prongs converge towards the ends of the prongs remote from the back portion, the mouths formed between those ends of juxtaposed pairs of the prongs being sized such that a terminal lead can be fitted into the intervening spaces between each juxtaposed pair of prongs with a snap action.

7. An alternating current machine according to claim 5, wherein each member is provided with means fitted to the ends of its prongs for bracing the leads into it.

8. An alternating current machine according to claim 7, wherein said means which are operable to brace the leads into each member are part of an elongate flexible rod member which, in addition to functioning to brace the leads into the respective member, also comprises a strap portion which is passed under the back portion of the respective member, remote from the prongs, and under bundles of conductors that comprise portions of the stator windings that have been turned around at said one

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end of the stator, whereby the respective member is strapped to the stator windings by the strap portion.

9. An alternating current machine according to claim 1, wherein the rotor is coupled with a fan for conjoint rotation, the fan being within a casing and being operable to cause air flow through the stator from said one end, that air flow being drawn into the stator through the ventilation gaps formed between juxtaposed terminal leads and adjacent supporting and guiding means at said one end of the stator, the casing cooperating with the fan to provide a conduit for discharge air flow from the fan.

10. An alternating current machine according to claim 9, wherein the conduit is in the form of a volute whereby its area increases progressively in the downstream direction.

11. An alternating current machine according to claim 9, wherein there are two sets of conduits diametrically opposed one with respect to the other and oriented to discharge in opposite directions.

12. An alternating current machine according to claim

10, wherein the fan is a radial flow fan which has blades which project from the hub at an angle which is oblique to the radial whereby those blades trail the radial.

5 13. An alternating current machine according to claim 10, wherein the tip of each blade is angled with respect to the axis of rotation of the fan whereby it diverges from the surrounding casing wall in the direction which is parallel to the axis of rotation and which extends
10 away from said one end of the stator.

14. An alternating current machine according to claim 10, wherein the fan is bolted onto the rotor so as to be readily replaceable.

15 15. An alternating current machine according to claims 1 to 14, wherein said terminal means comprise a structural panel formed of an electrically insulating structural material, busbars which extend through and
20 which are supported by the panel with minimal clearance therearound, the busbars having terminals formed at either end, said terminal leads being connected to the busbar terminals that are on the same side of the panel as are the stator windings, the arrangement being such
25 that the panel substantially closes the surrounds of the

busbars around which it is close fitted.

16. An alternating current machine according to claim
15, wherein the structural panel comprises abutting
5 juxtaposed elongate members.

17. An alternating current machine according to claim
16, wherein each elongate member is an angle member,
upstanding portions of the juxtaposed angle members
10 being in face to face abutment with the busbars
sandwiched between them and the other edges of the angle
members abutting also, each busbar extending through a
respective recess formed in one of the abutting faces in
the juxtaposed angle members.

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18. An alternating current machine according to claim
15, wherein the busbars comprise three power output
busbars and, for each such power output busbar, a
respective neutral and a pair of spaced busbars, which
20 are located between the respective power output and
neutral busbars from which they are spaced, and linking
means operable selectively to connect said pair of spaced
busbars together for a series star connection and to
connect one busbar of each said pair to the adjacent one
25 of the power output and neutral busbars and to connect

the other busbar of each said pair to the other of the power output and neutral busbars for a parallel star connection, said connections by said linking means being made on the side of said structural panel opposite to the ends of the busbars to which said terminal leads are connected.

19. An alternating current machine according to claims 1, wherein the neutral terminal leads are connected to a solid ring of a good electrically conducting material which in turn is connected to said terminal means.

20. An alternating current machine according to claim 19, in which said terminal means comprise a structural panel formed of an electrically insulating structural material, busbars which extend through and which are supported by the panel with minimal clearance therearound, the busbars having terminals formed at either end, said terminal leads being connected to the busbar terminals that are on the same side of the panel as are the stator windings, the arrangement being such that the panel substantially closes the surrounds of the busbars around which it is close fitted, wherein said ring is connected to a neutral busbar below said panel.

21. An alternating current machine according to claim 19, wherein said ring is open ended and both of its ends are connected to said neutral busbar by respective connecting means.

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22. An alternating current machine according to claim 19, wherein said ring is supported by said supporting and guiding means.

10 23. An alternating current machine according to claim 22, in which each member comprises an elongate back portion with integral prongs which project laterally therefrom so that it has the form of a comb, the prongs projecting outwardly with respect to the axis of the
15 stator and serving as spacers which space juxtaposed ones of the terminal leads apart and react electromagnetic forces which act to urge them towards either of the terminal leads they separate, wherein said ring is supported in contact with the one of said prongs of each
20 said member that is the furthest from the stator.

24. An alternating current machine according to claim 23, in which each member is provided with means fitted to the ends of its prongs for bracing the leads into it
25 and said means which are operable to brace the leads into

each member are part of an elongate flexible rod member which in addition to functioning to brace the leads into the respective member, also comprises a strap portion which is passed under the back portion of the respective member, remote from the prongs, and under bundles of conductors that comprise portions of the stator windings that have been turned around at said one end of the stator, whereby the respective member is strapped to the stator windings by the strap position, wherein said ring is held so supported in contact with said one prong of each said member by the respective flexible rod member by which that member is strapped to the stator windings.

25. A terminal arrangement for leads from stator windings of an alternating current machine, comprising an array of structural members and busbars which extend through and which are supported by the array, the busbars having terminals at either end, wherein the improvement comprises the structural members of the array being formed of an electrically insulating structural material and being in face to face abutment whereby they form a structural panel which presents a substantially uninterrupted surface, each of the busbars which extends through and which is supported by the panel being a close fit within a respective through passage, the through

passage being formed by appropriate grooves in abutting faces of the structural members, the arrangement being such that the panel substantially closes the surrounds of the busbars around which it is close fitted.

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26. A terminal arrangement according to claim 25, wherein each structural member is elongate and is an angle member, upstanding portions of the juxtaposed angle members being in face to face abutment with the busbars therebetween close fitted in such grooves which are formed thereby and the other edges of the angle members abutting also.

27. A terminal arrangement according to claim 25, wherein the busbars comprise three power output busbars and, for each such power output busbar, a respective neutral and a pair of spaced busbars which are located between the respective power output and neutral busbars from which they are spaced, and linking means operable selectively to connect said pair of spaced busbars together for a series star connection and to connect one busbar of each said pair to the adjacent one of the power output and neutral busbars and to connect the other busbar of each said pair to the other of the power output and neutral busbars for a parallel star connection, said

connections by said linking means being made on the side of said structural panel opposite to the ends of the busbars to which stator winding terminal leads are connected.

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28. An alternating current machine comprising a rotor journalled for rotation within a stator, the stator comprising stator windings which project from one end of the stator for connection to a terminal arrangement, and
10 the rotor being coupled with a radial flow fan for conjoint rotation, the fan being within a casing and being operable to cause air flow through the stator from said one end, the casing cooperating with the fan to provide a conduit for discharge of air flow from the fan,
15 the conduit being in the form of a volute whereby its area increases progressively in the downstream direction, wherein the improvement comprises the fan having blades which project from the hub at an angle which is oblique to the radial.

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29. An alternating current machine according to claim 28, wherein there are two such conduits diametrically opposed one with respect to the other and oriented to discharge in opposite directions.

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30. An alternating current machine according to claim
28, wherein the tip of each blade is angled with respect
to the axis of rotation of the fan whereby it diverges
from the surrounding casing wall in the direction which
5 is parallel to the axis of rotation and which extends
away from said one end of the stator.

31. An alternating current machine according to claim
28, wherein the fan is bolted onto the rotor so as to be
10 readily replaceable.